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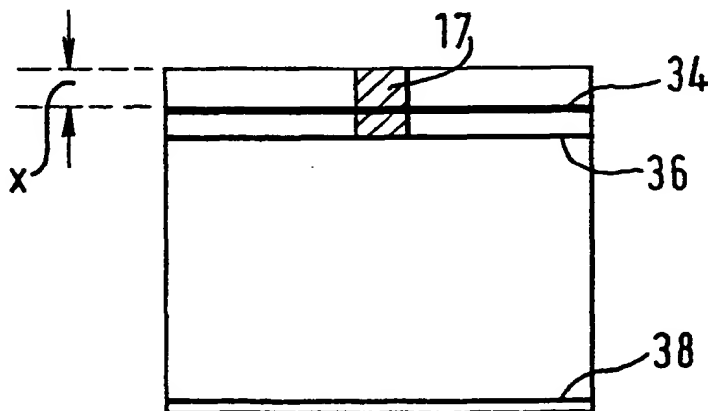
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(54) Title: PLASTIC BAG AND METHOD OF MAKING THE SAME



(57) Abstract: A plastics bag has at least one seal (34, 36) extending parallel to the mouth of the bag to close the sides. Preferably, a reclosable zipper seal (36) is provided below a top seal (34). A novel tag is provided, secured to the zipper seal (36) and extending through the top seal (34). The tag (11) is generally M-shaped in cross-section with its outside legs secured to the seals and with an inner tuck which the consumer can withdraw from the mouth of the bag and break open to make an access hole through the seal or seals into the interior of the bag to facilitate full opening of the mouth of the bag. Methods of manufacturing such bags are also described, particularly for use with

WO 01/26992 A1

form-fill-seal machines.

PLASTICS BAGS AND METHODS OF MAKING THE SAME

This invention relates generally to plastics bags, and particularly to plastics bags which have been formed, filled and sealed. The invention is also concerned with methods of manufacturing such bags to incorporate means by which they can easily be opened. The invention is also concerned with tag material used as a means to facilitate the opening of such bags.

10 Plastics bags which have been formed, filled and sealed are often difficult to open because of the effectiveness of the seal. In many cases, the pulling force needed on the sides of the bag to open the top seal is substantial.

It is an object of the present invention to provide means
15 for more easily opening sealed bags, especially those which have been formed, filled with contents and sealed.

It is also an object of the present invention to provide a method of manufacturing a plastics bag to incorporate means for easy opening.

20 In accordance with one aspect of the present invention there is provided a plastics bag comprising a pair of sides defining an openable mouth along one margin of the sides, a seal extending parallel to said margin to close the sides, and a tag within a part of the seal which can be withdrawn and
25 used to open a zone of the seal to permit access to the interior of the bag.

Preferably, the tag is positioned substantially centrally of the said margin of the bag.

Preferably, the tag is folded to lie within the contour
30 of the bag sides until withdrawn.

In a preferred embodiment, the tag is folded in a

generally M-shaped configuration in cross-section, with the outside surfaces of the outside legs of the tag being sealed to the seal and/or to the sides of the bag, and with the inside legs being arranged to be withdrawn from between the 5 outside legs.

It is of assistance if the inside surfaces of the outside legs of the tag are in peel seal engagement with the outside surfaces of the inside legs of the tag in said M-shaped configuration.

10 The tag is preferably provided with a line of weakness, e.g. perforations, along the junction of the inside legs of the tag.

In a preferred embodiment, the bag has two seals extending parallel to the said margin, one of which is a 15 reclosable zipper seal.

Preferably, the zipper seal has marginal flanges extending laterally from interengageable male and female closure members, and the tag is sealed to the inside surfaces of flanges extending from the closure members towards the 20 mouth of the bag.

In accordance with another aspect of the present invention there is provided a method of manufacturing a plastics bag which includes providing a seal parallel to a margin of a bag which defines an openable mouth, and 25 incorporating into a part of the seal a tag which can be withdrawn and used to open a zone of the seal to permit access to the interior of the bag.

In one preferred method, the method includes sealing the tag to flanges of a reclosable zipper seal having 30 interengageable male and female closure members, sealing the zipper seal and tag to a host material which is to form the

sides of the bag, forming the bag, and creating a second seal parallel to said margin, on the side of the zipper seal which is closer to the mouth of the bag, with the tag extending through the second seal.

- 5 In an alternative method, the method includes sealing the tag to a host material which is to form the sides of the bag, forming the bag, and creating the seal parallel to said margin with the tag extending through the seal.

It will therefore be appreciated that the present
10 invention can be used both with bags which incorporate a reclosable zipper seal along with the top seal, and also with bags which have a top seal only.

Also in accordance with the invention there is provided tag material comprising an elongate strip comprising a first
15 layer having an outside surface suitable to be sealed to a web of plastics material and a second layer having an outside surface having peel-seal properties, wherein the strip is folded about its longitudinal axis into a generally M-shaped configuration with the first layer on the outside and with the
20 outer legs of the folded strip extending beyond the tuck.

The tag which is used as the agent by which the seal can be broken and the bag opened is preferably a piece of laminated material. The laminated material preferably comprises an outer layer to be sealed to the host film, a
25 layer to provide the tag with strength, a layer to provide the tag with thermal insulation and a peel seal layer.

The method of manufacturing a bag in accordance with the invention is particularly appropriate for use with a zipper strip applied transversely to the direction of advance of the
30 host material, i.e. using cross-web technology.

In order that the invention may be more fully understood,

a number of presently preferred embodiments will now be described by way of example and with reference to the accompanying drawings. In the drawings:

Fig. 1 shows the structure of a laminated material
5 suitable for use as a tag in accordance with the present invention;

Fig. 2 shows the laminated material folded to make a tag;

Fig. 3 is a sectional view showing the insertion of a folded tag into a zipper strip;

10 Fig. 4 shows the zipper strip and tag sealed to a host material;

Fig. 5 shows a modified embodiment where just the folded tag is sealed to the host material;

Fig. 6 is a schematic view of a sealing jaw construction
15 on a form-fill-seal machine for use in the method according to the present invention;

Fig. 7 is a front view of a bag in accordance with the invention provided with a top seal, a zipper seal and a tag;

Fig. 8 is a top view of the bag of Fig. 7;

20 Fig. 9 shows the bag of Fig. 7 with the tuck of the tag withdrawn;

Fig. 10 shows the bag of Fig. 9 with the tag opened; and

Fig. 11 is a front view of a bag in accordance with the invention provided with just a top seal and a tag.

25 Referring first to Fig. 1 there is shown a laminated material 10 for use in making tags for use in bags in accordance with the invention. The material 10 comprises an outer layer 12 of a material suitable to be sealed to a host material, i.e. a plastics film. One suitable material is
30 polyethylene. Next to the polyethylene layer 12 is a layer 14 to give the laminate strength. This can be of polyethylene

terephthalate (PET) material. There is then a layer 16, for example of foil material, to give the laminate heat insulation properties. Next to this layer is a layer 18 of material which has peel seal properties. These layers are bonded together. A line of perforations 20 is provided centrally along the length of the laminate material to provide a line of weakness. These perforations can be holes or slits through the laminate.

The laminate material 10 can be stored on a roll. The laminate material is folded, as shown in Fig. 2, substantially into an "M" shape, with two outer legs 13a, 13b and two inner legs 15a, 15b which form an inner tuck. In Fig. 2 is shown an embodiment of tag material which has only the two layers 12 and 18. Each of the intermediate layers 14 and 16 of Fig. 1 can be regarded as optional, although desirable. The outer legs extend down beyond the tuck and the line of perforations 20 is then at the bottom of the tuck, i.e. at the junction of the inner legs 15a, 15b. The material can be stored on a roll already doubled over about the perforation line 20 and with the tuck folded in and with the peel seal layer surfaces which are then facing one another welded together. The facing surfaces of peel seal material are sealed together, as represented by the "crosses" in Fig. 3. Alternatively, the peel seal layer surfaces can be welded together at a subsequent stage in the manufacture of the bag.

A section of the folded laminated material 10 is fed into an applicator and is cut to length to make a tag 17. Adhesive is then applied to the outer faces 19 of the outer layer 12 in the region of the outer legs 13a, 13b which extend beyond the tuck and the tag 17 is then inserted between the top flanges 22 of a cross web zipper 24 as shown in Fig. 3. The

adhesive thus sticks the tag 17 to the zipper 24.

In one embodiment of form-fill-seal machine, the zipper 24 and tag 17 are then sealed jointly to the host material 26 as shown in Fig. 4. The host material 26 is a length of 5 plastics film or web from which the bag is to be made. They can be applied to the film using a cross web technique, and sealed in position. This is done if the bag is to have both a top seal and a zipper seal.

If the final bag is not to include a zipper seal, but 10 only a top seal, then the folded tag 17 is not affixed to a zipper strip as shown in Fig. 3, but is sealed by itself to the host material 26, as shown in Fig. 5. The tags 17 are positioned at appropriate intervals along the length of the advancing host material 26.

15 The host material 26 carrying the zippers and tags (Fig. 4), or the tags alone (Fig. 5), is then run as normal through a form-fill-seal machine including passage over a forming shoulder. Fig. 6 shows the sealing jaw construction used to seal the bag after filling when the bag is to incorporate both 20 a zipper seal and a top seal. The sealing jaw construction comprises upper sealing jaws 28 and zipper sealing jaws 30. The upper jaws 28 incorporate impulse or resistance heating means in their facing surfaces 29 to effect the required top seal. The web material 26 is thereby sealed to itself along 25 the greater part of the width of the bag, but in the area of the tag 17 the web material 26 is sealed to those parts of the outside surfaces of the outer legs 13a, 13b of the tag which are in alignment with the tuck. Similarly, the lower jaws 30 effect the sealing of the zipper seal flanges to the web 30 material 26. The jaws also incorporate a knife 32 to sever the bags. In Fig. 5 there is indicated a spacing x. This

is the minimum distance required to incorporate the tag. Upon the top end seal of the bag being made by the jaws 28, the tag 17 protrudes through the seal with the outer portions of the tag sealed to the host film. This is illustrated in Fig. 7 5 which shows the bag construction. Here there is a top seal 34 and a zipper seal 36 and a bottom seal 38. The tag is sandwiched between the webs of the film and the distance between the top seal 34 and the top end of the bag is again x as in Fig. 6. This distance x can be approximately 5 10 millimetres.

If the bag incorporates no zipper seal 36, but only a top seal 34, then the tag 17 will simply protrude from the top seal 34, as shown in Fig. 11.

Fig. 8 shows a top view of the bag with the tag 17 in the 15 centre of the seal.

In order to open the sealed bag the tucked-in portion of the tag is pulled up by a finger as shown in Fig. 9, with the peel seals opening. This creates a protruding loop. A finger can then be inserted into the loop of the tag to break the 20 perforations 20. This creates two protruding flaps. When the two flaps of the tag which are thus created are pulled apart the peel seal material of the tag overlaid by seal 34, and by seal 36 if present, will give, allowing entry to the inside of the bag through the opened tag, as shown in Fig. 10. The 25 opening of the peel seal material gives an access hole through the top seal 34, and through the zipper seal 36 if provided, directly to the interior of the bag. The opening can then be enlarged.

CLAIMS:

1. A plastics bag comprising a pair of sides defining an openable mouth along one margin of the sides, a seal extending parallel to said margin to close the sides, and a tag within a part of the seal which can be withdrawn and used to open a zone of the seal to permit access to the interior of the bag.
2. A bag according to claim 1, in which the tag is positioned substantially centrally of the said margin of the bag.
3. A bag according to claim 1 or 2, in which the tag is folded to lie within the contour of the bag sides until withdrawn.
4. A bag according to any preceding claim, in which the tag is folded in a generally M-shaped configuration in cross-section, with the outside surfaces of the outside legs of the tag being sealed to the seal and/or to the sides of the bag, and with the inside legs being arranged to be withdrawn from between the outside legs.
5. A bag according to claim 4, in which the inside surfaces of the outside legs of the tag are in peel seal engagement with the outside surfaces of the inside legs of the tag in said M-shaped configuration.
6. A bag according to claim 4 or 5, in which only the outside legs of the tag extending beyond the inside legs are sealed to the seal.
7. A bag according to claim 4, 5 or 6, in which the tag is provided with a line of weakness along the junction of the inside legs of the tag.
8. A bag according to claim 7, in which the line of weakness comprises a row of perforations.

9. A bag according to any preceding claim, in which the tag is made of a laminated material

10. A bag according to claim 9, in which the laminated material comprises at least three layers.

5 11. A bag according to claim 10, in which the laminated material comprises four layers, a first layer of a material which is sealable to a plastics film, a second layer of a relatively strong material, a third layer which has heat insulating properties and a fourth layer of peel seal
10 material.

12. A bag according to any preceding claim, which has two seals extending parallel to the said margin, one of which is a reclosable zipper seal.

13. A bag according to claim 12, in which the reclosable
15 zipper seal is on the inside in relation to the other seal, and the tag is located within both seals.

14. A bag according to claim 12 or 13, in which the zipper seal has marginal flanges extending laterally from interengageable male and female closure members, and the tag
20 is sealed to the inside surfaces of flanges extending from the closure members towards the mouth of the bag.

15. A method of manufacturing a plastics bag which includes providing a seal parallel to a margin of a bag which defines an openable mouth, and incorporating into a part of
25 the seal a tag which can be withdrawn and used to open a zone of the seal to permit access to the interior of the bag.

16. A method according to claim 15, which includes sealing the tag to flanges of a reclosable zipper seal having interengageable male and female closure members, sealing the
30 zipper seal and tag to a host material which is to form the sides of the bag, forming the bag, and creating a second seal

parallel to said margin, on the side of the zipper seal which is closer to the mouth of the bag, with the tag extending through the second seal.

17. A method according to claim 15, which includes sealing the tag to a host material which is to form the sides of the bag, forming the bag, and creating the seal parallel to said margin with the tag extending through the seal.

18. A method according to claim 15, 16 or 17, which includes folding a length of laminated material into a generally M-shaped configuration in cross-section, and cutting off a section of the folded material to form the tag.

19. A method according to claim 18, which includes providing a line of weakness along the junction of the inside legs of the tag.

20. A method according to any of claims 15 to 19, in which the tag is located on the host material so that the tag lies within the contour of the bag sides when the bag is completed and sealed.

21. Tag material comprising an elongate strip comprising a first layer having an outside surface suitable to be sealed to a web of plastics material and a second layer having an outside surface having peel-seal properties, wherein the strip is folded about its longitudinal axis into a generally M-shaped configuration with the first layer on the outside and with the outer legs of the folded strip extending beyond the tuck.

22. Tag material according to claim 21, in which a line of weakness is provided along the length of the strip so as to be located at the apex of the tuck when folded.

23. Tag material according to claim 22, in which the line of weakness comprises a row of perforations through the

strip.

24. Tag material according to claim 21, 22 or 23, in which the strip also includes a layer of strengthening material between the first and second layers.

5 25. Tag material according to any of claims 21 to 24, in which the strip also includes a layer of heat insulating material between the first and second layers.

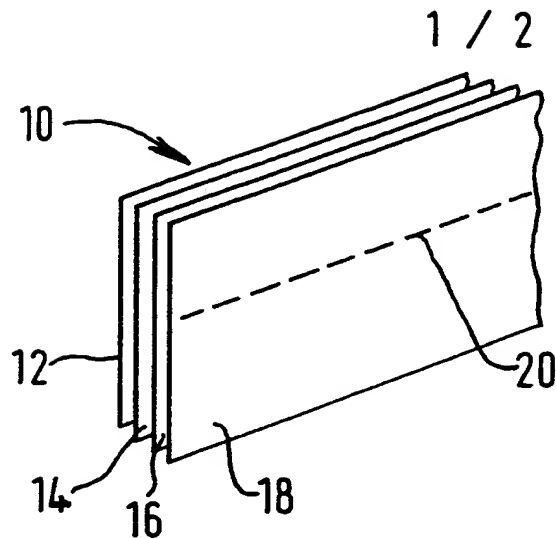


FIG. 1.

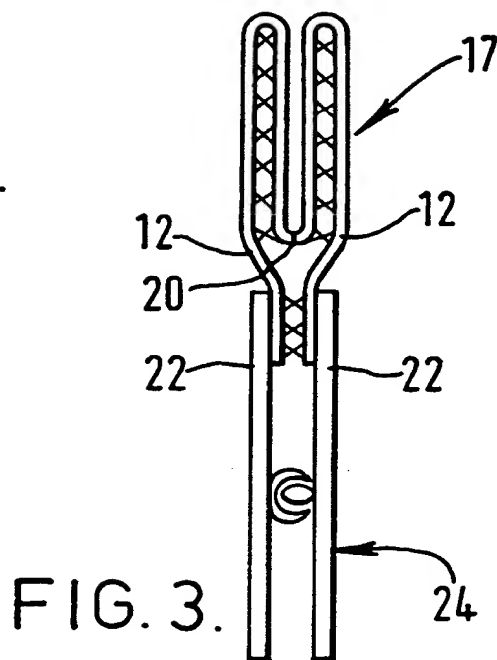
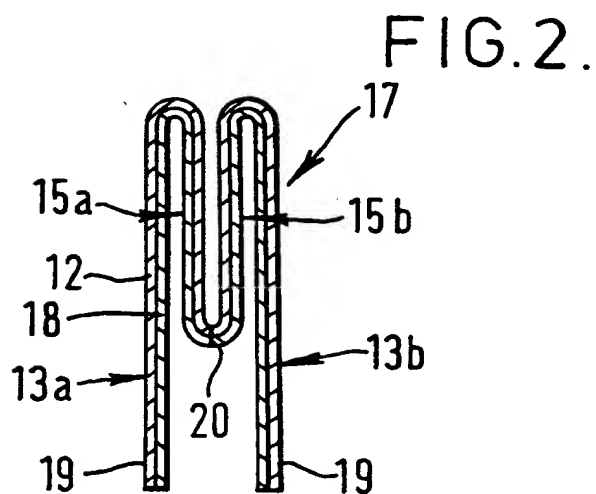
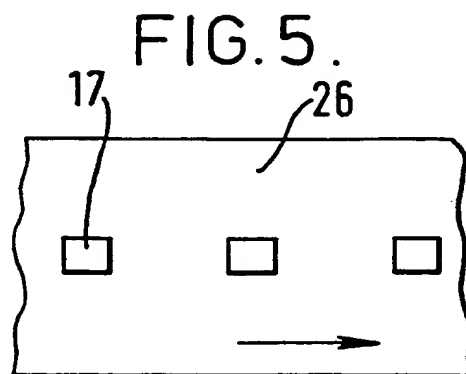
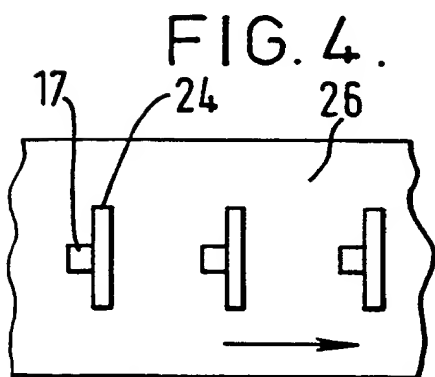


FIG. 3.



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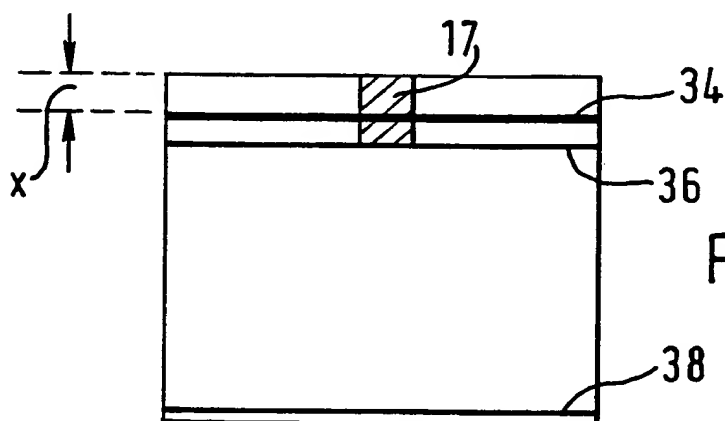
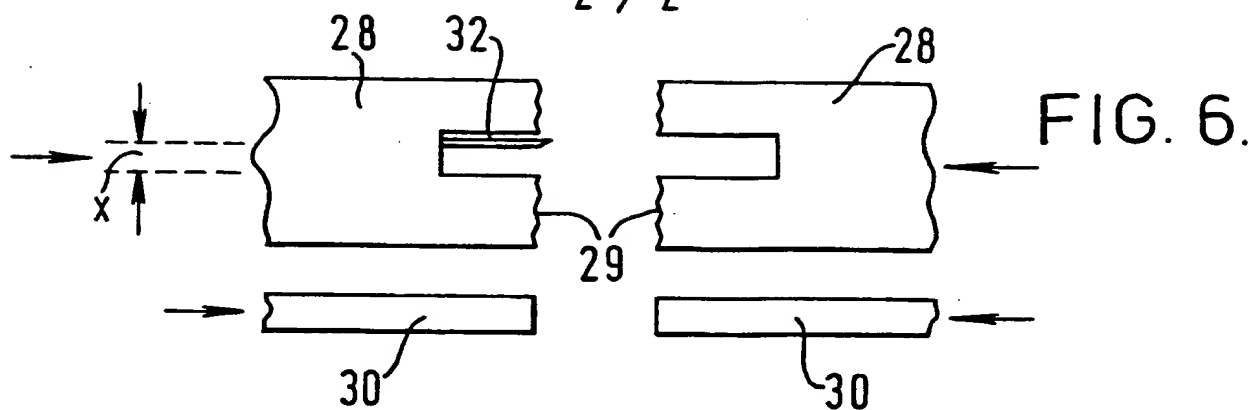


FIG. 8.

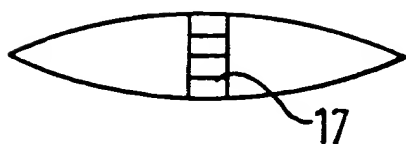


FIG. 7.



FIG. 9.

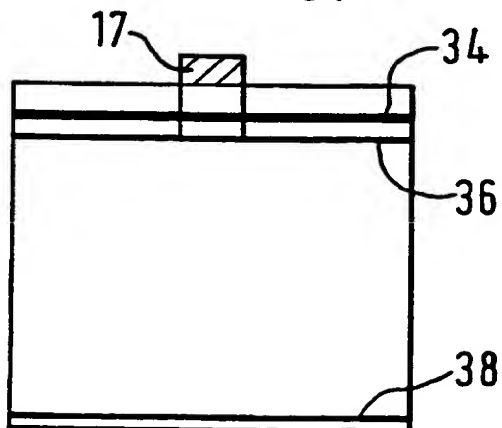
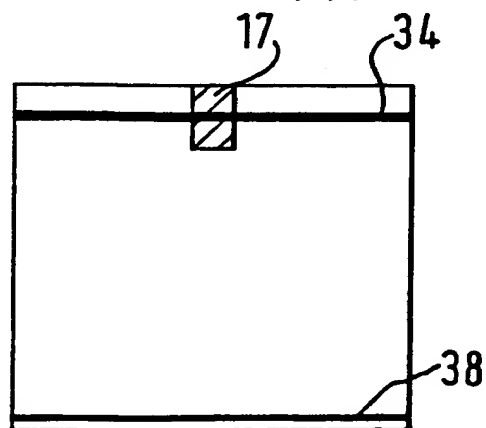


FIG. 11.



INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 00/03699

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D75/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 480 752 A (JACOBS RICHARD W) 6 November 1984 (1984-11-06) column 1, line 45 - line 48; figure 6	1, 15
A	EP 0 779 222 A (JUJO PAPER CO LTD) 18 June 1997 (1997-06-18) column 3, line 4 - line 18; figures 10-12, 14	21
A	DE 26 22 659 A (NEEMANN M FA) 1 December 1977 (1977-12-01) figure 3	21



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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- *X* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

19 December 2000

Date of mailing of the international search report

29/12/2000

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 00/03699

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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			SG 43448 A	17-10-1997
			US 5897052 A	27-04-1999
DE 2622659	A	01-12-1977	NONE	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP 00/03699

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 4480752	A	06-11-1984	CA	1208607 A	29-07-1986
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			JP	3037622 B	24-04-2000
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			SG	43448 A	17-10-1997
			US	5897052 A	27-04-1999
DE 2622659	A	01-12-1977	NONE		

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference RBT/P300471W0	FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small>	
International application No. PCT/GB 00/03699	International filing date (day/month/year) 27/09/2000	(Earliest) Priority Date (day/month/year) 12/10/1999
Applicant SUPREME PLASTICS GROUP LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



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the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

PLASTIC BAG AND METHOD OF MAKING THE SAME

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.

7



None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP 00/03699

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B65D75/58

According to International Patent Classification (IPC) or to both national classification and IPC

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